CHAPTER 3: PLANNING CONSIDERATIONS, PARK SIGN PLANS AND INVENTORIES

ENGINEERING STUDY REQUIREMENTS

The decision to use a particular traffic control device at a particular location should be made on the basis of an engineering study of the location. Thus, while this Manual and the MUTCD provide guidance and standards for design and application of traffic control devices, they are not a substitute for engineering judgment. It is the intent of these Manuals to make available to Park Managers currently accepted practices and standards for traffic control devices and their installation. Qualified engineers are nevertheless needed to exercise the engineering judgment inherent in the selection of traffic control devices for a particular site, just as they are needed to locate and design the roads and streets which the devices complement. Those areas which do not have qualified engineers on their staff should seek assistance from the Regional Office, WASO Engineering and Safety Services Division, Denver Service Center, Federal Highway Administration, local or state highway departments, the county, a nearby city, or a traffic engineering consultant.

PLANNING CONSIDERATIONS

To assist the Park Sign Committee, some consideration and guidelines for preparing signs - texts, layout, and size - as well as methods for selecting appropriate sites are suggested. In determining the need for any sign or marker, the following questions should be answered:

1. What does the visitor need to know?
2. Is guidance or a message needed?
3. If so, where is a message needed?
4. What message is needed?
5. How shall the message be presented (sign, symbol, exhibit, audio, or other means)?
6. Is the sign for drivers of vehicles, pedestrians, or both?
7. At what speed is the visitor traveling?

Before proceeding with a sign, the answers to the above questions should be tested on several people not immediately concerned with the particular sign under consideration.

To be effective the sign must:

1. Fulfill a need.
2. Command the attention and respect of user.
3. Convey a clear simple message.
4. Give adequate time for proper response.

To fulfill these requirements, five basic considerations should be made:

1. *Uniformity.* Similar situations are treated in the same way. Uniformity of traffic control devices simplifies the driver's task of recognizing, understanding, and reacting. It helps the National Park Service through economy in manufacturing, maintenance, administration, and recognition by the users that they are in the National Park System. Simply using uniform traffic control devices does not in itself constitute uniformity. A standard uniform device used where it is not appropriate is as objectionable as a nonstandard device; in fact, this may be worse because misuse breeds disrespect of all devices.

2. *Design.* The device should assure that features such as size, contrast, color, shape, composition, and lighting or reflectorization are combined to draw attention to the device; that shape, size, color, and simplicity of message produce a clear meaning; that legibility and size combine with placement to permit adequate time for driver response.

3. *Placement.* This assures that the device is within sight of the user so that it will command attention, and is such that a driver traveling at normal speed has enough time to safely make the proper response.

4. *Operation.* The right device must be installed to meet the traffic requirements at a given location; it must be placed in a uniform and consistent manner so motorists will properly respond to the device, based on their previous exposure to similar traffic control situations.

5. *Maintenance.* Devices must be maintained to a high standard to assure that legibility is retained, that the device is visible, and that it is removed if no longer needed.

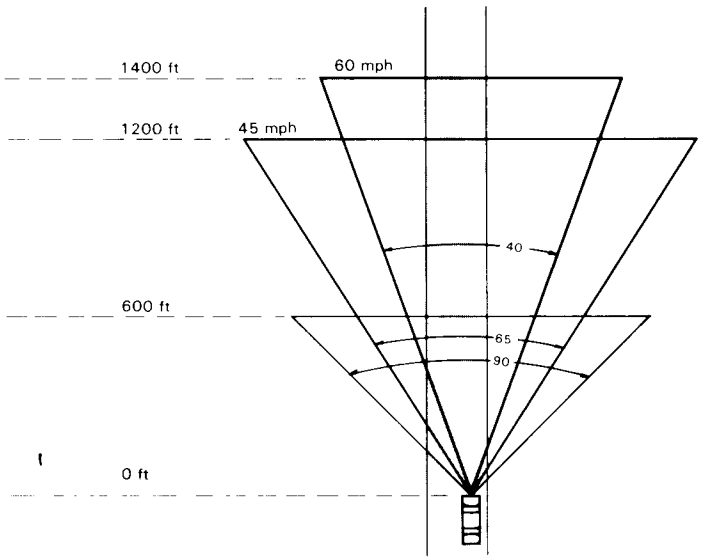
Design and placement of signs on park roads must be compatible with vehicle speed, traffic pattern, and the driver's visual perception responses.

1. As speed increases, driver concentration increases.

2. As speed decreases, driver concentration recedes. At 25 mph, the natural eye focus point lies 600 feet ahead of the car; at 45 mph it lies 1,200 feet ahead of the car.

3. As speed increases, the driver's peripheral vision decreases. More horizontal clearance is possible in sign placement on low speed roads.

4. As speed increases, foreground details begin to fade. At 40 mph the closest point of clear vision lies 80 feet ahead of the car. At 60 mph the driver can see clearly only that detail within an area 110 to 1,400 feet ahead of the car and within an angle of 40 degrees. At that speed, the distance between 110 and 1,400 feet is traveled in less than 15 seconds.



DRIVER'S VISUAL PERCEPTION RESPONSES

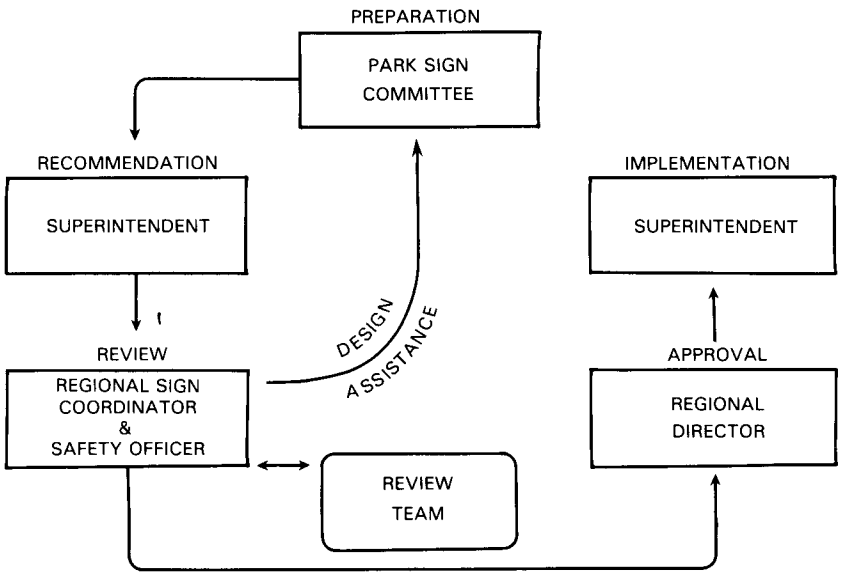
SIGN PLAN AND INVENTORY

The National Park Service "Traffic Control Sign System Guideline, NPS-52" require that each Park have a current sign plan and inventory. The Park Sign Plan establishes the role of all signs in carrying out the Park's objectives. Signing must relate to all transportation modes, providing information, direction and traffic control for the benefit of the visitor's safety. References for the preparation of this plan includes the various Park planning documents, including the Interpretive Prospectus and Wayside Exhibit Plan, manuals and data as appropriate. A sample sign plan and information helpful to its preparation are included in Appendix B and Appendix C. The plan should address four major planning concerns.

1. *Descriptive Narrative*
   This material should be brief, delineating the purpose of the plan as it relates to the mission of the Park, its resources, and the presentation of this mission and purpose to the visitor.
2. *Sign Survey and Inventory*
   The sign survey and inventory should identify the effectiveness of the existing signing and serve as a maintenance document. It should include type, location, description, text, installation data, condition, and initial cost. There should be room to include data for repairs made and when, inspections made and conditions recorded and recommended changes for replacement signs. Photographs of all informational, directional, interpretive and other unique signs are recommended for inclusion with the inventory for reference when replacements are needed or when changes in text are being considered.
3. *Location Plan*
   This section contains drawings showing existing and proposed locations, message and orientation for proposed signs. The existing locations also identify inventory and photograph numbers.
4. *Summary*
   This section outlines the general function of the plan and how it is integrated into the other area management, operations, and safety practices.

Review and Approval Process

The following flow chart illustrates review and approval process for the Park Sign Plan from preparation by the Park Sign Committee, through the Superintendent to the Region for approval. After approval, the Regional Director returns the plans to the Park for implementation:



Annual Inspection, Review and Sign Plan Update

The Park Sign Committee will conduct an annual inspection of signs and review the Park Sign Plan. This critical inspection and review provides an opportunity to keep park signs current, and to update the Sign Survey and Inventory. Inspections shall be made both in daylight and at night. Any revisions to the Sign Plan should also be prepared at this time and submitted to the Region as an appendix to the approved plan, or as revised substitute pages. If revisions are extensive the review and approval process may be required.

Sample Forms

The following forms,

10-47 Sign Survey and Inventory - 1 (Descriptive Data), and
10-48 Sign Survey and Inventory - 2 (Historical Data)

may be used to establish an initial inventory or to supplement an existing inventory system. The instruction which follow may be used to complete these forms. An alternate approach may be to use the 10-84 series sign requisition forms to establish a park sign inventory. These forms do not, however, provide sign location data or post details. If 10-84 series forms are selected for your park sign inventory, an option worth considering would be to photocopy the 10-48 Historical Data form or something similar on the back of each form. In this way the descriptive information and maintenance record for each sign would be on one page.

Instructions

The following is a list of codes for use in completing Forms 10-47 and 10-48. The codes are in the same sequence as contained on the respective forms, reading from left to right.

All columns should be completely filled out. For those columns for which no information is available, fill in the spaces with ''zeros''.

Completed forms may be maintained and organized in any system considered best by the individual park or area.

The conventional rule on the use of digits and numbers on ADP forms will apply, i.e., the ''unit'' number, the last entry of a number or code, will be placed in the extreme right-hand box of the spaces provided for that code.

Example: MUTCD sign M4-9L would be coded 00M49L. The extra zeros are added to fill in columns for which no other data entry is available.

FORM 10-47

Sign Number

Each sign shall be assigned a five-digit number. The first three digits shall be the route number assigned during the Road Inventory and Needs Study (RIP) and as shown on the area or route maps of the RIP reports. The remaining digits shall be unique to the individual sign.

Examples: 01143 - sign number 43 on Route 11.

The numbers assigned shall be used consistently in all reports. Sign numbers should be stamped unobtrusively on the back of each sign for field inventory, and possible indentification in theft recovery.

Area

Park

This entry will be a five digit number consisting of a zero followed by the park organization code as presently prescribed, e.g. 05170 for Guilford Courthouse National Military Park, or 09500 for Olympic National Park.

Operation (OP) Unit

The division or operation unit in which the sign is located.

Type

Code

RG	Regulatory
WA	Warning
IF	Information
DM	Destination (Direction & Mileage)
IN	Interpretive
EN	Entrance
PM	Plaques & Markers
NP	NPS Emblem
ST	Statuary
RM	Route Marker
XX	Other

Manual Numbers

Manual numbers refer to the MUTCD numbers assigned to symbol, warning and regulatory signs in the latest edition of the MUTCD or *Standard Highway Signs Book.*

Fund

Not to be used

Location

Road

Route: The route number assigned during the Road Inventory Program.

Mile: The mileage shall be determined by established mile posts, if available, or by certified odometer reading to the nearest $1/10$. Roads shall be surveyed west to east and south to north. Beginning points and mileage shall be consistent with Road Inventory data.

Direction (DIREC)

The direction or nearest direction the sign faces: N-North; E-East, S-South, W-West.

Description

Size

Sign: Code as shown for given sign size.

01	6 x 6 to 36 x 36 (Informational Signs Only)
02	42 x 38 to 54 x 46
03	60 x 48 to 114 x 60
04	120 x 62 to 150 x 90
09	Standard size Regulatory or Warning sign, as specified in MUTCD.

Letter:

01	12" uppercase/8" lowercase height (oversize category 1)
02	9"/6" (categories 1, 1A)
03	6"/4" (category 2)
04	3.75"/2.5" (category 3)
05	2.25"/1.5" (category 4)
06	1.5"/1.0" (category 5)
07	1.0"/.67" (category 5A)
08	Other (Informational signs only)
09	Standard letter size specified in MUTCD for the appropriate Regulatory or Warning sign.

Color: Background (BACK) and Letters (LTR): Use these codes for both background and letters.

RD	Red
WH	White
GR	Green
BR	Brown
BL	Blue
YE	Yellow
BK	Black
OR	Orange
GB	Grey-Blue
XX	Other

Materials

Post:

01	Steel Channel or U
02	Wood 4" x 4" or 4" x 6"
03	Wood 6" x 6" or larger (breakaway only)
04	Steel Pipe
05	Concrete
06	Light Pole
07	Aluminum
08	Weathered Steel Tubing, 2" x 2" with Breakaway Mount
09	Weathered Steel Tubing, 4" x 2½"with Breakaway Mount
10	Weathered Steel Tubing, 6" x 4" with Breakaway Mount
XX	Other

Face: Codes apply to surface material only.

01	Reflective Sheeting, (FP 85, Type III)
02	Reflective Sheeting, (FP 85, Type II)
03	NonReflective Sheeting
04	Reflective Paint
05	Beads on Paint
06	NonReflective Paint
07	Reflector Buttons
08	Unpainted Wood
09	Anodized (Aluminum)
10	Unpainted Metal
XX	Other

Back: Sign material, or backing upon which facing is mounted.

01	Aluminum (not routed)
02	Plywood
03	Other Wood
04	Steel
05	Routed Aluminum
06	Plastic
07	Steel Plate
08	Stone or Monument
09	Embossed Steel
XX	Other

TEXT - (Wording of Sign)

Print or type sign text or graphics as it appears on the sign, using a slash to separate each line of the message. Use only one line of form 10-47, leaving off what cannot be included on that line. This area may also be used to identify photo number if text does not fit.

FORM 10-47
(JAN 1984)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

SIGN SURVEY AND INVENTORY - 1 (Descriptive Data)

SIGN NUMBER	AREA		TYPE		FUND	LOCATION			DESCRIPTION							
	PARK	OP UNIT	CODE	MANUAL NUMBER		ROAD		DIRECT	SIZE		COLOR		MATERIALS			
						ROUTE	MILE		SIGN	LTR	BACK	LTR	POST	FACE	BACK	

FORM 10-48

Fiscal Year (FY)

Space is available to record maintenance data for three consecutive years.

Sign Number

Code as described under "Sign Number" section, SIGN SURVEY AND INVENTORY, 1-(Descriptive Data).

Date Installed

Code shall be a four-digit number. The first two digits shall be the month, and last two digits shall be the last two digits of year.

Month:

01	January
02	February
03	March
04	April
05	May
06	June
07	July
08	August
09	September
10	October
11	November
12	December

Year:

86	1986
87	1987
88	1988
89	1989
etc.	

(Example: January 1986 would be 0186.)

Installation Cost

Include costs of manufacturing, shipping and installing the sign.

01	$0-25
02	26-50
03	51-75
04	76-100
05	101-200
06	201-300
07	301-400
08	401-500
09	501-600
10	601-700
11	701-900
12	1000+
13	No cost to NPS

Condition Codes

Post-Condition

01	Satisfactory
02	Not Straight
03	Needs Painting
04	Deteriorated
05	Needs Straightening & Painting
06	Warped (wood)
XX	Other

Face-Condition

01	Satisfactory
02	Defaced
03	Corroded
04	Mounting Loose
05	Faded
06	Not Legible
07	Warped (wood)
08	Deteriorated
09	Paint Peeling
10	Reflective / Nonreflective / Peeling
XX	

Letters (LTRS)-Condition

01	Satisfactory
02	Defaced
03	Faded
04	Not Legible
05	Paint Peeling
06	Reflective / Nonreflective / Peeling
XX	Other

Reflectivity (REFL)-Condition

01	Excellent
02	Good
03	Fair
04	Poor
05	Nonreflective

Visibility (VISIB)-Condition

01	Can be seen easily
02	Hidden by official sign
03	Hidden by advertising sign
04	Hidden by brush
05	Hidden by tree limbs
06	Hidden by parked vehicles
07	Hidden because of curve
08	Hidden because of hill
09	Hidden because of building
XX	Other

Maintenance Cost (Maint. Cost)

01	No Cost
02	$00-25
03	26-50
04	51-100
05	100+

Remarks Code

01	Satisfactory
02	Vandalized
03	Requires one-for-one replacement
04	Obsolete
05	Requires text revision
06	Location inappropriate
07	Struck by vehicle
08	Weather damage
09	Does not meet sign size standards
10	Does not meet letter size standards
11	Does not meet location standards
XX	Other

Date Replaced

Code as described under "Date Installed." Code date an existing sign is replaced with a new sign, or date the sign is dropped from inventory.

FORM 10-48
(JAN 1984)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

SIGN SURVEY AND INVENTORY - 2 (Historical Data)

SIGN NUMBER	DATE INSTAL-LED	INSTALLED COST	FY ______ CONDITION CODES					MAINT. COST	REMARKS CODE	FY ______ CONDITION CODES					MAINT. COST	REMARKS CODE	FY ______ CONDITION CODES					MAINT. COST	REMARKS CODE	DATE RE-PLACED
			POST	FACE	LTRS	REFL	VISIB			POST	FACE	LTRS	REFL	VISIB			POST	FACE	LTRS	REFL	VISIB			

STOCKS/INVENTORY

The National Park Service "Traffic Control Sign System Guideline (NPS-52)" is very specific in detailing the responsibilities of the Regional Director and Park Superintendents. The duty to maintain signs in a safe and reasonable condition involves inspection, anticipation of defects and conformity with generally accepted standards and practices. The carrying out of these responsibilities includes the maintenance of stock materials for repairing signs, and an inventory of replacement signs particularly those required regulatory and warning signs.

Through periodic inspections and recording of these inspections on the park sign inventory, the Park manager can develop a list of those materials most often used and those signs most likely to be subject to theft and vandalism and acquire and maintain a stock accordingly.